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THE HOW-&-WHY BOOKS

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THE STORY OF CIVILIZATION

THE STORY OF CIVILIZATION

BY

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INTRODUCTION

I. A TALK

Myself. I am trying to write a book on Civilization, and I want to find out what being civilized is. What do you think?

Lucy. Oh, I suppose, wearing proper clothes, riding about in buses and cars, having money to buy things and shops to buy them in.

Myself. Yes, but babies wear proper clothes, and Mrs. X¹ rides in buses, and buys things in shops. Would you say that babies and Mrs. X were civilized?

Lucy. Oh no! I don't think they are a bit. But, you see, they could be if they liked. There are so many civilized things about now, that anybody can be civilized if he tries.

Myself. What sort of things do you mean?

Lucy. Machines, and trains, and wireless, and telephones, and cinemas.

Myself. Well, I dare say they have something to do now with civilization; but I don't think that just having them and using them makes you civilized. After all, being civilized ought to be some credit to you, something you can be proud of, and there is

¹ Mrs. X is the housekeeper. Lucy thinks her rather savage.

nothing to be proud of about getting into a train. Let us try and think of some civilized people, and see if that helps us. Tell me anybody you can think of.

Lucy. Shakespeare.

Myself. Why?

Lucy. Because he was a great man and wrote plays that people are proud of.

Myself. Now I think we may be getting warmer. But tell me, do you like Shakespeare's plays?

Lucy. Not much.

Myself. Then why do you say they are great?

Lucy. Because, I suppose, I shall like them some day. Anyway, grown-up people make a great fuss about them.

Myself. Yes, and there are other things such as pictures and music that you don't like much yet, but grown-ups make a fuss about. If Shakespeare's plays are a sign of civilization, so are Raphael's pictures and Beethoven's music.

Lucy. I suppose so, although I don't know much about them.

Myself. Then if to produce beautiful things such as plays, pictures and music is being civilized, people like Shakespeare and Raphael and Beethoven are the sort of people who count.

Lucy. But all sorts of people I have read about, like the Caliphs and Princes in the *Arabian Nights*, had splendid things, palaces and silks and satins, and jewels, scents and gorgeous clothes, and wonderful carpets, and lovely things to eat and drink, and slaves to wait on them. Weren't they civilized?

Myself. I am not sure. You see, they just had what they liked and did what they wanted to.

Lucy. Well, why shouldn't they? ♡

Myself. Think of something nice, anything you like . . .

Lucy. Treacle toffees.

Myself. Well, suppose you were very rich, had as much money as you could possibly want, and bought thousands and thousands of treacle toffees. Wouldn't you get sick of them?

Lucy. I suppose so.

Myself. And similarly with catapults.

Lucy. What do you mean?

Myself. Well, John likes catapults more than anything else. But suppose he was very rich indeed, and, because he liked catapults best, spent his money on buying catapults, so that he had hundreds of them. He wouldn't be much better off than he was with one or two, would he?

Lucy. You mean he could not let off more than one or two at once.

Myself. Yes. And he would very soon get tired of catapults altogether.

Lucy. I expect he would; but what has that got to do with it?

Myself. Why, this: that the things you read about in the *Arabian Nights*, the splendid palaces and gorgeous clothes and hundreds of slaves, and all that sort of thing, seem to me to be just grown-up substitutes for treacle toffees and catapults. People get born the sons of kings, and they grow up to inherit power and riches, and then they say to themselves, "Now, what do I like best?" And

having found out what it was, they have spent their money in getting as much or as many of what they liked best as they could.

Lucy. And then they got tired of it?

Myself. Yes. Because when you have had a certain amount of doing just what you want and enjoying the sort of things you like, you don't want any more.

Lucy. Like getting tired of the treacle toffees. But you can always stop and begin again.

Myself. That is what the Romans did. They used to eat enormous meals, and when they couldn't eat any more, they took something to make them sick. Then, when they were empty, they began to eat again. But I don't call that being civilized. Do you?

Lucy. No, I don't.

Myself. After all, pigs do that, although they haven't the sense to be sick afterwards.

Lucy. And pigs are not at all civilized.

Myself. Well then, let us say that using money and power just to get what you want and do what you like, although it may be very nice for a time, isn't being civilized. In other words, civilization is not just being splendid and grand and living in luxury. And since most of the princes and rulers of the world who have been rich and powerful have used their money and power in this way, they weren't civilized.

Lucy. And isn't it being civilized to own gorgeous things like the Caliphs in the *Arabian Nights*?

Myself. No! They must also be beautiful things like the plays and pictures we were talking about.

Lucy. How do you know which are the beautiful things?

Myself. By seeing which are the ones you don't get tired of. Beautiful things live. That is to say, people go on liking them in all ages. But things which are the grown-up substitutes for treacle toffees last only a short time, because people get tired of them.

But let us go back a bit. Those shops and machines and cars we were talking about, they are not at all beautiful, yet we thought they might have something to do with being civilized.

Lucy. Yes, and I know what it is. They have all been invented, and making inventions is the sort of thing people do when they are civilized. It is because James Watt watched the kettle, and Newton saw the apple drop, and things like that, that there are inventions now.

Myself. Yes, but it was the *inventing* and not the *inventions* that mattered.

Lucy. I don't understand.

Myself. Well, lots of people had seen kettles boil and apples fall down before Watt and Newton, yet they did not invent anything. Why not?

Lucy. They didn't notice anything special about them, I suppose.

Myself. Quite. But Newton and Watt did; that was the point. Falling apples and boiling kettles caused them to think new thoughts, and because they thought new thoughts, men came to understand more about the world and to invent things. Now, although I am not sure about the things we actually invent, I do think that this business of thinking new thoughts, whether they lead to inventions or not, is a sign of being civilized.

Lucy. Why?

Myself. Because, so long as people go on just thinking the same as one another, nothing ever changes.

Lucy. You mean that if everybody had always thought the same as their parents we should still be savages?

Myself. That's it! It's because people think new things that civilization happens. And to think what is new they must also think freely.

Lucy. Why shouldn't they?

Myself. Well, they haven't, you know. Most people who have thought for themselves have been told that it was wicked to think differently from other people. Usually there have been priests who have told them that if they thought this or that, the gods would punish them. And people believed the priests and were afraid of the gods, and thought what they were told to think. And even if there hadn't been priests, people always get disliked who think or act differently from their neighbours. Look how beastly you are to new girls at school who are a bit different from the others. And grown-ups are just the same. Now, to think freely is very often to think differently, and these things make it very difficult for people to think freely. Yet, as we have seen, without free thinking there can be no civilization.

Lucy. But I still don't see why more people don't think freely, if it is as important as you say.

Myself. There are a lot of things which are necessary before a person gets the chance. For instance, he must have security; nobody can think about

things, if he is afraid of being robbed or murdered at any moment. Also he must have leisure to think in, and he won't have that if he has to give all his attention to getting food to eat and clothes to wear, if, that is to say, he spends all his time earning his living. And he must have other people to talk to. So that you may say that security, leisure and society, which are all necessary to free thinking, are necessary also to civilization.

Lucy. Is that all about civilization?

Myself. I think there may be one other thing.

Lucy. What is that?

Myself. All this business about being good.

Lucy. But what has being good to do with it? Nobody wants to be good really; they are only good because they get into rows if they are not.

Myself. Probably. And again it is just the same with grown-ups. If I want to kidnap somebody else's children, or cut his throat, or steal his car, or play with his tennis racquet, I don't do it partly because I should get into such a row if I were found out.

Lucy. But what has that got to do with civilization?

Myself. Just this. That if we all took what we wanted to and ran off with one another's children, and stole one another's racquets, things just couldn't go on. We should all be quarrelling and fighting, for one thing. And, for another, nobody would be able to invent anything or make beautiful things: life would be too dangerous. So there would be no civilization anyway.

Lucy. Is that why grown-up people keep the rules and are good?

Myself. Perhaps it is not the only reason. I am not sure. But it is certainly one of the main ones. So, you see, this business of being good has something to do with civilization, and being good means acting justly towards your neighbour, and respecting his property and obeying the laws, and perhaps other things as well.

Lucy. What things? I should like to know what being good is.

Myself. So should I; so would lots of people. Anyway, we have discovered some of the things that count as being civilized, making beautiful things, thinking freely and thinking new things, and keeping the rules, without which people couldn't get on together. Grown-ups call the first of these things art, the second science and philosophy, and the third political justice and ethics. Now these things may not be all that civilization is, but anyway they will do to go on with.¹

II. A TALK ABOUT THE TALK

I have given this talk that I had with Lucy, because it explains, as well as I can explain it, something of what I mean by civilization, and it explains too why I have left out of this book the story of many great kings and empires which you might think ought to have gone into it. The empires you read about in the Bible, such as Assyria and Baby-

¹ Young readers may now, if they like, skip to page 20, where the story of civilization really begins. They should return to this chapter when they have reached the end of the book.—Ed.

lon, and the famous cities of the East like Samarkand and Baghdad, were no doubt very splendid and luxurious, but they were in the main "treacle toffee" civilizations. This is not altogether true of Egypt, and even in ancient Babylon, no doubt, some men lived civilized lives, made good laws and produced beautiful things. And among the rulers of these old countries there must have been some who were wise and enlightened. But in the main, the princes and the princesses, the Caliphs, whom you meet in the *Arabian Nights*, and the rich and powerful people of all countries, were content, as most people have always been content, to get what they liked and to enjoy it. At bottom, most of these old kings and rulers were just treacle toffee eaters. So the Empires and the Caliphs and the kings and princes don't for the most part come into this book.

And there are two other points. ✍

The first is this: to have power is a good thing, provided you use it properly. But most of the rulers that one hears about in history, when they got tired of "treacle toffees" and wanted to show off their power, did so by bossing and bullying other people. For example, most of the world's great Empires have been built up on slavery. Slaves are people whom you own, just as you own furniture or clothes or toys; and just as you can do exactly what you like with your toys (and why not, since after all they are only things and not alive?) so you could do exactly what you liked with your slaves. And what most people have seemed to like to do most was to order them about, to make them work very hard, pay them very little money, give them very little

to eat, and to kill them and torture them when they felt inclined. To-day we have machines to do the work of slaves, or some of it.¹ ✓

Nor is it only slaves that have been bullied and ordered about. As a matter of fact, great kings with supreme power have as often as not behaved in this way to everybody. Great kings and rulers are people who have the power to treat everybody as owners treat slaves, and usually do. They can make people do whatever they want, and if anyone refuses, off goes his head. We call this using power tyrannically, and the ruler who behaves like this a tyrant. Tyranny has nothing to do with civilization, so I have left out all princes and rulers called great only because they had immense power.

And the other point is this. Most of the people who appear most often and most gloriously in the history books are great conquerors and generals and soldiers, whereas the people who really helped civilization forward are often never mentioned at all. We do not know who first set a broken leg, or launched a seaworthy boat, or calculated the length of the year, or manured a field; but we know all about the killers and destroyers. People think a great deal of them, so much so that on all the highest pillars in the great cities of the world you will find the figure of a conqueror or a general or a soldier. And I think most people believe that the greatest countries are those that have beaten in battle the greatest number of other countries and ruled over them as conquerors. It is just possible they are, but they are not the most civilized. ✓

¹ See Chap. VII.

Animals fight; so do savages; hence to be good at fighting is to be good in the way in which an animal or a savage is good, but it is not to be civilized. Even being good at getting other people to fight for you and telling them how to do it most efficiently—this, after all, is what conquerors and generals have done—is not being civilized. People fight to settle quarrels. Fighting means killing, and civilized peoples ought to be able to find some way of settling their disputes other than by seeing which side can kill off the greater number of the other side, and then saying that that side which has killed most has won. And not only has won, but, because it has won, has been in the right. For that is what going to war means; it means saying that might is right.¹

Now being a great soldier or conqueror may be quite good fun, but it is not being civilized. And so I have left out people like Caesar and Napoleon and Alexander from my story of civilization. For what were they after all but men who were specially successful in getting multitudes of other men killed? Now all through history people have wanted money and power and quarrelled with their neighbours; they have used money to buy “treacle toffees” and nothing but “treacle toffees”, they have used power to bully other people, and, when they have quarrelled with their neighbours, they have tried to kill them. That is what the story of mankind has on the whole been like. Even our own age has just fought the greatest war in history, in which over ten million men were killed and over twenty million mutilated. And while to-day it is true that people do not fight and kill each other in the streets, while,

that is to say, we have got to the stage of keeping the rules and behaving properly to each other in daily life, nations and countries have not learnt to do this yet, and still behave like savages. And although we do not keep slaves and a man is free to work or not as he likes, most of the population is still very poor indeed, and, if a man does not do what his employer tells him, as likely as not he will starve. —

So you see that with most of history this book will have nothing to do. There has been very little civilization in the world and very few civilized peoples. Indeed, if I were only to include the peoples who never behaved like savages, never made themselves sick with treacle toffees, never killed and never bullied, it would never be written at all; for there would be nobody to put in it.

But we must not expect too much. After all, the race of men has only just started. From the point of view of evolution, human beings are very young children indeed, babies, in fact, of a few months old. Scientists reckon that there has been life of some sort on the earth in the form of jelly-fish and that kind of creature for about twelve hundred million years; but there have been men for only one million years, and there have been civilized men for about eight thousand years at the outside. These figures are difficult to grasp; so let us scale them down. Suppose that we reckon the whole past of living creatures on the earth as one hundred years; then the whole past of man works out at about one month, and during that month there have been civilizations for between seven and eight hours. So you see there has been little time to learn

in, but there will be oceans of time in which to learn better. Taking man's civilized past at about seven or eight hours, we may estimate his future, that is to say, the whole period between now and when the sun grows too cold to maintain life any longer on the earth, at about one hundred thousand years.¹ Thus mankind is only at the beginning of its civilized life, and, as I say, we must not expect too much. The past of man has been on the whole a pretty beastly business, a business of fighting and bullying and gorging and grabbing and hurting. We must not expect even civilized peoples not to have done these things. All we can ask is that they will sometimes have done something else. If they have they will get a mention.

But what else? For, as somebody has just very properly remarked, I have made a great pother over what civilization is not, but I haven't said what civilization is. But, you see, I am still not quite sure myself, and I have written this book partly to find out. Perhaps we shall both of us know better when I have said a little about the few civilizations that there have been in the world. So let us talk about it again at the end.

¹ This works out at about twelve hundred thousand million years (twelve and eleven noughts) in real time.

CHAPTER I

THE GREAT RELIGIOUS TEACHERS

THE earliest civilizations of which I shall write are those of India and China which existed some 2500 years ago. But I shall not describe them at any length, and this for two reasons. First, we know very little about them, so that in any event there is not much to say; secondly, they are chiefly famous for their religions. The Indians and the Chinese deserve a mention, not so much because they thought freely, or made beautiful things (although the Chinese in particular did both), as because they had new ideas about what I have called the business of being good, and tried to put them into practice.

Early Religious Ideas.—In order to show the religious advance made by these civilizations, I must first say something about the religious ideas which prevailed before they began. Early religious ideas might be described as a mixture of fear and cupboard love. Primitive man found himself at the mercy of all kinds of material forces which he did not understand and could not control; thunder and lightning and earthquakes and floods. He could not imagine these things happening without

something to make them happen, and, according to his ideas, something meant somebody. There must be, he thought, some kind of *person* behind these thunderstorms and earthquakes, and in this notion of a somebody who caused dreadful things to happen we have the beginning of the idea of god. But primitive man did not think of one god who was responsible for everything that took place, but of a number of gods, each of them ruling over a particular department of the world. For instance in Egypt, where there was already some kind of civilization, one of the earliest known, some four thousand years ago, there was a great multiplicity of these gods, a god for the moon, a god for the sun, a god of darkness, a god even of learning. Many of these gods were animals; there was a cow goddess (Isis), a frog goddess (Hekt), and so on. The gods loved and hated and struggled and had favourites just like human beings, and practically everything that happened in the world was thought to be due to them. And people had to be very careful to keep them in a good temper, for the gods were liable to get angry and sulk, with terrible results for human beings. All through the early history of man runs the idea that it is only by praying to the gods and flattering them that man can survive the many perils of his life. For example, the Egyptians believed that the morning would only come if Ré, the sun god, was fetched up from the underworld every twenty-four hours by the prayers of the high-priest, who had to humble himself and beg Ré to appear.

The Power of Priests.—Beliefs of this sort gave

very great power to the priests. The priests were the "go betweens" between men and gods; they alone knew the will of the gods, and they told men what it was. Thus the priests managed to get the people to do whatever they wanted them to do by simply saying that it was the will of the gods, and must therefore be done, or some terrible disaster would befall. By this means the priests became very powerful.

This power of the priests, which was founded on fear of the gods, led to many cruel practices, among them human sacrifice. For the priests were apt to say that unless living victims were sacrificed to please the gods, the gods would show their displeasure by causing the tribe to be defeated in battle, by spoiling the crops, or in some other unpleasant way. To take the case of Egypt again, the prosperity of the country depends very largely on the river Nile. The Egyptian soil is very dry and would bear no crops unless it were watered by the Nile. Every year the Nile overflows its banks and floods the country for miles all round, and as a result of this flooding the land is fertilized and bears crops. Now the river Nile, of course, had its special god, or rather goddess, and the priests said that unless the proper sacrifices and burnt offerings were made to the goddess of the Nile, the river would refuse to overflow its banks and people would starve. The sacrifices were usually animals, oxen and so forth, but sometimes they were human beings. Most primitive people have had beliefs of this sort. The Aztecs, who lived in Mexico, believed that men were created to be the food of the sun

and were required to fight and slay one another, so that it should not want for nourishment. Hence they thought that unless they offered the sun human flesh from time to time, its light would grow dim. ✓

Cupboard Love for the Gods.—Not only were the rites and practices of early peoples cruel, not only did they give great power to the priests, but they meant that people had a very low idea of religion. Early religions, as I said above, are a mixture of fear and cupboard love. You are afraid of the evil things the gods will do to you unless you keep them in a good temper, and you have hopes of the good things they will do for you if you like them or pretend to like them well enough. In other words, you worship them for what you think you can get out of them. And so you flatter them and pray to them and tell them how powerful and how good they are, and bribe them with sacrifices and by making presents to the priests for the temple. The worse-tempered the gods were, the more presents you had to make; and it is not to be wondered at that the priests, who benefited by the presents, made out that the gods were very bad tempered indeed.

One God instead of Many.—The chief merit of the civilizations about which I am first going to write is that they rose above these very primitive ideas about the gods. In the Old Testament of the Bible, which was written by the Jews, and the Indian sacred writings called the Upanishads, we find it being taught that there is only one God. This substitution of one God for many was undoubtedly a great advance; for one thing it put an ||

end, although only by degrees, to the practice of human sacrifice. But it must be admitted that the Jehovah of the Old Testament is not a very agreeable person. He is a terribly *jealous* God who will not admit any rivals, and he is always getting cross, so that, although the belief in him may have caused the Jews to act righteously, they did so chiefly in order to avoid incurring his wrath. Fear, in fact, was still the mainspring of religion.

But in the sixth century before Christ there arose in India and China three great teachers who tried to make men understand that it was important to do what was right for its own sake, quite apart from whether there was a God or not. ♡

Buddha.—Of these the most important was Gautama Buddha (568–488 B.C.). Buddha was a rich young Indian, born of a noble family. At the age of nineteen he married a beautiful cousin, and until he was twenty-nine lived the ordinary life of an Indian nobleman of his times, the kind of life which I have called a “treacle toffee” life. Then he suddenly became discontented; this life that he had been living was not, he felt, the real life, but a sort of holiday. He wanted to find out the meaning and purpose of being alive, and with this object he joined for a time the ascetics.

There have been ascetics at all times and in all countries, but they have always been particularly numerous in India. They are people who believe that power and holiness may be obtained by making one's body uncomfortable, as for example by not eating or sleeping, and by beating oneself. But after a time Buddha turned from these ideas. Having

come to see that the way to discover truth is not to have a weak or diseased body, he horrified his companions by demanding food. Accordingly they cast him out as a failure, and for a time he wandered quite alone. We know nothing of his wanderings, but presently we find him sitting under an enormous fig tree, called the Bo tree. Here he had a kind of vision. And his vision resulted in the first great teaching about good and right which was given to mankind.

Buddha taught that all man's unhappiness comes from wanting the wrong sort of things, the pleasures that money can buy, power over other men, and, most important of all, to go on living forever after one is dead. The desire for these things makes people selfish, he said, so that they come to think only of themselves, to want things only for themselves, and not to mind overmuch what happens to other people. And since they do not get all their wishes, they are restless and discontented. The only way to avoid this restlessness is to get rid of the desires that cause it. This is very difficult, but when a man achieves it, he reaches a state of mind or soul which is called Nirvana, which is a state of perfect quiet and calm. Some Buddhists have supposed that people live a number of different lives, and that what happens to them in each life depends upon the way in which they have behaved in their former lives. For instance, if you have been very wicked in a previous life, you get born a slave or even one of the lower animals as a sort of punishment. And you go on living life after life until you reach the stage of having got rid of

your desires, and entering Nirvana. This does not, however, seem to have been the teaching of Buddha himself.

Lao-Tse and Confucius.—About the same time as Buddha, two great religious teachers arose in China. Lao-Tse's teaching (about 600-510 B.C.) was very like that of Buddha. Confucius (550-478 B.C.) paid more attention to men's relations to their fellow-men. His view was that a man could not achieve goodness all by himself, since it was natural for him to live in society together with other men. And, since the society which he knew, the China of his day, was as full of strife and suffering as most societies have been, he taught that the way for a man to become good was by helping to make society better. "It is impossible," he said, "to withdraw from the world, and associate with birds and beasts that have nothing in common with me. With whom, then, should I associate but with suffering men? The disorder that prevails is what requires my efforts." And so he laid down a code of rules for conduct in daily life. These rules are very detailed; they lay down what one should eat, what wear, what visits one should pay, how conduct oneself in public, and so on, and they have governed the behaviour of the Chinese ever since.

The teachings of Buddha, Lao-Tse and Confucius are known by the Chinese as the Three Teachings. The Chinese and the Indians are very numerous, and although very few Indians remain Buddhists to-day, these three teachings, which are in many important respects the same teaching, have determined what most living human beings have

thought and believed with regard to matters of good and evil and right and wrong. And not only most human beings but most civilized human beings. For, although the history of China has been very stormy and the state of China to-day is unsettled and confused, the Chinese have been civilized for a longer period and more continuously than any other people. In spite of the troubled times through which China has passed, and the many different peoples who have invaded it, Chinese civilization has never died out, and it is quite possible that, as it came before any of the other civilizations, so it may last longer than any.

Importance of Asoka.—That Buddhism became so important in the world is largely due to a great king who ruled in India in the third century B.C. He is the only king I shall mention in this book, and his name is Asoka (264–227 B.C.). Like most famous kings in history, Asoka was a conqueror. His father, Chandragupta, had transformed India from a number of little warring states into a more or less unified country, and Asoka pushed his father's conquests right down to the southern end of India. Unlike the other great conquerors in history, however, he seems to have realized the suffering that war involved. He was a devout Buddhist and wanted to make other people Buddhists too. But it could not, he thought, be right to spread what you believed by violent means; and so he gave up war, while still victorious, and decided to devote himself to spreading Buddhism not by fighting but by preaching. He kept his empire at peace and ruled it wisely. In particular, he did much to make India

more prosperous by digging wells, planting trees, founding hospitals, and educating his people. He even tried to educate women, which was an unheard-of thing in those days. And he sent out missionaries all over Asia and into Europe to spread the teachings of Buddha.

While doing these things he met with the opposition of the priests. For Buddhism, unlike most other religions, does not require priests and clergymen to teach men how to be good, to pray to the gods on their behalf, and to persuade the gods to favour them. It teaches that men can become good by themselves without the aid of priests, and ought to try to do so apart altogether from the question of pleasing the gods.

What the Great Religions teach.—But although these new religions were addressed to individual men and women, they all of them tried to show that happiness lay in somehow forgetting that you were an individual man or woman, and in losing yourself in something greater than yourself. In this they were saying precisely what Jesus Christ was to say nearly 600 years later. Most people in the western world think Jesus was the greatest of the religious teachers, and regard the religion of Christianity which he founded as the most important of all the religions. Christianity to-day is the chief religion of western Europe and America. It is, however, important to remember that what Europeans and Americans think about Christ is not what the majority of men have thought about him or think even now. But, although men differ about who Christ was, most people believe that he was a very

great teacher indeed, and that what he taught about the way in which men ought to live is both noble and true.

We cannot doubt that if men lived the kind of life which these four great religious teachers urged them to live, the world would be much better and happier, and at the same time a more civilized place than it is or ever has been. Unfortunately their teachings, especially that of Jesus (who said that we should be kind even to our enemies), have usually been found to be too difficult for people to follow, though that is no reason why they shouldn't *try* to follow them.

All the great religious teachers of mankind have insisted on this: that men ought not to live for themselves alone. We ought not, they have said, to spend all our time and energy in getting just what we want for ourselves, power and money and importance in the world: we ought to serve something greater than ourselves, whether a god or a cause or our fellow-men. It is by serving this something greater that men will forget themselves and so achieve happiness. This or something like it is what the great religions have taught, and it is one of the most important of the things that civilization means. It is also the hardest to learn and practise; in fact most people have found it much too hard.

CHAPTER II

GREECE AND THE MAKING OF BEAUTIFUL THINGS

The Surprising Greeks.—And now I come to what many people consider to have been the greatest civilization that the world has seen, the civilization of the Greeks some five hundred years before Christ. This civilization, which lasted for about two hundred years, came to its height in the city of Athens, during the one hundred and fifty years from about 480–330 B.C. The Greeks were remarkable in all sorts of surprising ways, so many that, if I were to try to tell of even a few of them, this book would be about nobody else.

Most of the peoples that there have been in the world have added nothing to civilization; they have behaved exactly like their fathers and *their* fathers before them, preserved their traditional ways and customs and passed away. And history has nothing to say about them either for good or for ill. But every now and then comes a people which makes a break with the past and starts afresh on its own.

From time to time in the history of the world a small section of the human race has suddenly gone

up like a rocket, and, breaking out in a shower of sparks, lit up everybody and everything around it. Of all these soarings of the human spirit the uprising of the fifth-century (B.C.) Greeks was the most startling. They went up in a perfect blaze of splendour, and Athens was the most splendid rocket of them all. Let us try to imagine for a moment what an Athenian's days was like.

An Athenian's Day.—He woke up under a cloudless sky, probably on some terrace overlooking the sea. He breakfasted on a sort of verandah, and then went out as soon as he could to the streets and the market-place, for except to eat and sleep the Athenian is hardly ever at home; his life is passed out-of-doors. The streets and the market-place are full of his friends and acquaintances, and he spends a good deal of his time talking and arguing with them, especially arguing. The streets and the market-place of Athens were, like the clubs of to-day, places where people met for the fun of the thing, to talk about affairs and enjoy one another's company. But, as in the case of most modern clubs, there are no women about, or very few. Where, then, are the women? They are indoors. On the whole, the Greeks thought that men ought to spend their lives outdoors and women indoors, from which you will see that the men did not have much to do with the women.

After greeting his friends in the streets our Athenian may go and do a little work. But work does not mean for him as it does for most of us, sitting about indoors doing the same thing over and over again. He is, let us say, a potter making

clay vases, or a mason engaged in putting up one of the splendid public buildings on the Acropolis (the sacred hill of Athens). In his workshop there are two or three apprentices, and, say, half a dozen slaves. Although he is the master and gives the orders, he works with them on equal terms. On the whole, he treats his slaves well and pays them for the work they do as much as he pays free men. Presently they will have saved enough to buy their freedom, if they want it; for Greek slaves are continually becoming freed men either by purchasing their freedom, or by having worked long enough to have earned it. Altogether the workshop is more like the studio of an artist than a modern factory, and our Athenian has the habits of an artist rather than of a modern workman; he works only when he feels inclined, and his working will not interfere with his performance of his various duties as a citizen of the State.

The workshop itself is mostly out-of-doors in a sort of portico or verandah; the court is flooded with sunlight and the workers sing as they work. And what happens if it rains? It practically never does rain.

In the afternoon our Athenian will probably go to the assembly and take a turn at doing the State's business. The assembly is the governing body of Athens; all men citizens belong to it and have a right to speak. Moreover, they vote, and by their voting decide what the city shall do, what decisions shall be made about war and peace, what taxes levied, and so on. Usually our Athenian will think having to go to the assembly rather a bore,

and so after a time he gets paid money to attend. If he doesn't go to the assembly, he may put in an appearance at the law courts as a jurymen and decide disputes between his fellow-citizens. And wherever he goes he will meet people he knows to talk to, and, should he meet a stranger to the city in the streets, he will welcome him and ask him his business.

In the evening he will probably go to dine at the house of a friend. There may be half a dozen or a dozen other guests at dinner, which they will take lying on couches, the food and wine being brought round by slaves. Probably there will be no women present, and after dinner, or even while it is still going on, the men will begin to talk. Often they will go on talking all the evening without leaving the dining-room.

What they talked about.—What did they talk about? Anything and everything, science, philosophy, history, politics, religion, love, foreign lands, where the human race came from, where men go to when they die. There were hundreds of things to talk about, for the Greeks were interested in everything. They were thinking things out for themselves for the first time. For this is the first and perhaps the most important thing that I want to say about the Greek civilization; it was a civilization of men whose minds had at last got free, free to think and to talk as they liked. This, of course, only applies to some Greeks, perhaps only to a few; and the freedom and fearlessness of the few sometimes got them into trouble with the rest. You cannot after all expect everybody to be wonderful at

once, even when they *are* Greeks. But the few were the people who mattered. Afraid neither of gods nor of men, they regarded no subjects as sacred and none as wicked, and, being the most inquisitive people on the earth, they talked about and inquired into everything. It is only when I come to tell the story of later civilizations that you will see how unusual were this freedom and fearlessness of mind.

And talking and wondering and finding out, they laid the foundations of all the things that civilized people care for to-day, of science and philosophy and art and politics. Thus the Greeks practically began everything, and that was why they found life so exciting.

The First Doctors and Historians.—For example, the first doctor was a Greek, Hippocrates¹ (460 to about 370 B.C.), who lived on the island of Cos. Most of the things that Hippocrates found out about the body are now known to be not quite true, but he laid the foundations upon which others built—he and another Greek called Galen (A.D. 130–200), who lived at Rome five hundred years later. But, although we have found out much more than Hippocrates ever knew, doctors still try to observe the rules of medical conduct which he laid down, to help one's patients to the best of one's power, never to use magic or charms, never to supply poison, never to give away secrets, and always to try and help everybody in the house you are visiting.

¹ I say that Hippocrates lived, but it is quite possible that there never was any such person, any more than there was a St. George in the story of St. George and the Dragon. Hippocrates and his sayings may, in other words, be just a legend, but, if so, it is a legend which shows what sort of people the early Greek doctors were.

The Greeks, again, were the first historians, the first people, that is to say, to record the sayings and doings of other men, and to try to make a connected story of what had happened in the world. Herodotus (484-425 B.C.) travelled into far lands and brought back strange tales, and wrote the history of the wars of the Greeks and the Persians. Thucydides (about 470-400 B.C.), one of the world's most famous writers of history, told the story of the great war which the Greeks waged among themselves, the war of the Athenians against the Spartans. Thucydides is remarkable because he was the first man who tried to tell the true story of a quarrel without favouring either side.

The First Scientists and Philosophers.—Again, the Greeks began the study of geometry. Probably many of my readers have heard of Euclid (450-374 B.C.); if you haven't yet, you will. You will probably find him rather difficult and come to think of him only as the author of a boring and inky school-book about triangles and right-angles. It is a pity that you should have to think about Euclid like this, because he was a very great man who, with the aid of a little sand let into the floor, discovered the laws of geometry. Euclid wrote a book which survived long after the world which Euclid had known had been swept away, and the Greeks had been conquered by the Romans, and the Romans conquered in their turn by the barbarians, and the barbarians by the aid of that very book were at long last educated and turned into civilized peoples, among whom we number ourselves.

Euclid is not much studied in schools to-day,

but I had to learn him at school, which is, when you come to think of it, a very remarkable thing. For geometry is a sort of science, and in nothing is early knowledge so quickly left behind as it is in science. Yet here was I, twenty years ago, being made to read Euclid who wrote two thousand four hundred years ago.

There was nothing which our Athenian talked so much about at his dinner, nothing which interested him so much as philosophy. Philosophy is a sort of discussion about everything, about the difference between right and wrong, whether there are gods and what they are like, what the world is made of, how it began, how men ought to live together in society, whether they ought to own slaves, whether eating "treacle toffees" is the most important thing in life, and hundreds of other things. The Greeks began this discussion some two thousand four hundred years ago, and it has gone on practically ever since. And they had all sorts of exciting ideas about the subjects they discussed.

There was Socrates, for instance (about 471-399 B.C.). He used to go into the market-place and ask people inconvenient questions, the sort that children sometimes ask grown-up people, and which always annoy grown-up people when they find that they don't know the answers, although they thought they did. Socrates annoyed the Athenians so much that they accused him of doing harm to young men's minds and had him poisoned. This was one of the worst things the Athenians did.

Then there was Plato (427-347 B.C.). He was a

disciple of Socrates and wrote down most of his teaching in what are called Dialogues, which are talks carried on by a number of people who come together and discuss things in general. Socrates usually begins the Dialogues by asking his inconvenient questions, and then, when nobody can answer them, sets to work to try to answer them himself. These Dialogues of Plato are among the most famous and the wisest books in the world, and people who care about knowledge still read them eagerly to-day as they have done in all ages. After Plato came Aristotle (384-322 B.C.). He was one of the most inquisitive men who ever lived, and tried to find out about everything, about the stars, about what things were made of, about how the mind worked, about the different kinds of animals, and about what one ought to aim at in life.

I cannot even begin to speak of the answers which the Greeks suggested to all the questions they discussed. Indeed in a queer sort of way their greatness lay in the fact that they didn't answer them. Most of the people who came after the Greeks have tried to answer them and have thought that they had succeeded; but their answers have usually been wrong. In spite of this, however, they have insisted that they were right, and have made things very uncomfortable for those who did not answer them in the same way as themselves. The Greeks alone kept open minds, saw that there were all sorts of answers and let people choose their own. On the whole, perhaps, their main general idea, and that about which most of them were agreed, was that one ought to try

something of everything, but not have too much of anything. This is called the doctrine of "the mean", and it is a very good doctrine too.

And it must be remembered that, although the Greeks did not settle the things they talked about, they had enlightened ideas about them. Indeed they had the first enlightened ideas in the Western world. Thus we hear them in their discussions condemning slavery, trying to get rid of superstition, claiming for women the same rights as men, looking forward to the day when all mankind will be one brotherhood and there will be no more divisions and wars. And they are the first Western people (for we must not forget Buddha) ever to suggest that these things are possible.

There are two things about which I ought to say something more before I leave the Greeks; the first is their government and the second their art.

The Idea of Democracy.—Most of the governments of the world, as I said in the Introduction, have been cruel, oppressive and unjust. Their object has been not to do good to the people whom they were governing, but only to benefit those who were governing them. Usually the government has been in the hands of some absolute prince or ruler possessing supreme power, who did precisely what he liked with and to his subjects. In such cases he would be assisted by a few people belonging to highly placed families, who were treated like favourites in a school, and helped the ruler to keep the great mass of the people in subjection. Sometimes the families would govern by themselves without any one person as prince or supreme ruler.

The Greeks called the first kind of government a tyranny and the ruler a tyrant, and the second kind an aristocracy or oligarchy and the ruling families aristocrats or oligarchs. Tyrannies and aristocracies had been the rule in the world for centuries before the Greeks, and they were the rule again for centuries after them, which makes it all the more remarkable that some of the Greek cities, notably Athens, invented a new system of government called democracy, which is the kind of government which prevails in most civilized countries to-day.

The idea of a democracy is that the people shall do their governing for themselves. Obviously there must be special persons, called officers, or officials or ministers, to carry out the actual business of the State, discussing things with the representatives of other States, levying taxes and so on; but these officers are not in a democracy self-appointed rulers or ruling families, but are elected by the citizens themselves, who instruct them in a general sort of way what they shall say to foreign States, what taxes they shall levy, and how they shall conduct the State's business.

In Athens, where the total number of men citizens was not more than about forty thousand, it was possible in theory for all the citizens to attend the governing assembly, and to decide what the city's policy should be. In practice some six or seven thousand would actually turn up. In a modern democracy, where the number of citizens runs into many millions, this direct way of running things is not possible, and so the people

decide things indirectly, as it were, by electing men and women to represent them and carry out their wishes. These representatives are, in England, called members of Parliament, and from among them there is appointed a small number of ministers to be the government. Members of Parliament are elected once every five years, and if they do not succeed on the whole in carrying out the people's wishes or make a mess of things, they fail to get elected next time, and another Government takes their place.

When you think about it, you can see that a democracy is the only way of running the affairs of society which ensures that in the long run the things most people want get done. It is the only way, in fact, to prevent princes and rulers oppressing the people and running things in their own interests. Hence we owe a great debt to the Greeks for inventing democratic government.

The Romans and the Greeks.—When praising the government of the Greeks, however, it is important to remember that the Greeks were comparatively few in number and weak in power. They lived in a number of independent cities, of which Athens was the greatest, and, just because they were free and independent and could do what they liked, they were always quarrelling among themselves. Hence it was easy for the Romans, who first became powerful some three or four hundred years later, to conquer the Greeks and turn most of them into slaves.

But the Greeks, being much more civilized than the Romans, were able to teach them many things

they did not know, and in due course succeeded in civilizing their rulers. Thus the Roman Empire, which lasted for some five hundred years and spread over a great part of the then known world, was in effect a continuation of Greek civilization. But although the Romans took over and tried to continue Greek ideas, they only succeeded in spoiling most of what was best in them. The Romans were like the vulgar, rich relations of the Greeks, imitating them in everything but never managing to do things quite right.

Greek Art: the Greek Playwrights.—What people call art is that making of beautiful things about which I spoke in the Introduction as being one of the most important parts of civilization. Beautiful things are chiefly made in stone, in paint laid on canvas and in sound; and sculpture, painting and music are thus the chief arts. They are also written in words; the writing of beautiful things in words is called the art of literature. The writing of plays, a special branch of literature, is called drama. Now the Greeks were good at all the arts, but especially at drama and sculpture. The Athenian playwrights, Aeschylus (525-456 B.C.), Sophocles (495-406 B.C.) and Euripides (480-406 B.C.) are, next to Shakespeare, perhaps the most famous in the world. Sophocles and Aeschylus wrote plays of great beauty and power, showing that human beings are helpless in the hands of Fate and the gods. Euripides had ideas far in advance of his time; he thought that women were human beings and should be treated as such, that one ought to treat slaves kindly and pity the poor and the unfortunate. Some of Euri-

pides's ideas are rather like those of our famous modern playwright, Bernard Shaw. All three tried to show how easy it is for human beings who have a little success to get above themselves, and boast and swagger and think they are very fine fellows indeed. But if they do so, the dramatists taught, some great misfortune may be expected to happen to them; for the gods don't like human beings to get too puffed up, and are only too anxious to take them down a peg. The moral is that we ought to be careful when things go well with us not to take too much credit for it. Admittedly it is hard to be humble when you are doing well, and not to boast; but this is just the time when we ought to be most on our guard against offending the gods.

There was also a great comic writer, Aristophanes, who made jokes about public men and affairs.

The different playwrights competed each year for a prize which was given to the author of the best play of the year, and the audience themselves were the judges. The Athenians, who loved plays, would sit for hour after hour in their out-of-door theatre listening to the different plays sent in for the competition, and judging between them. The winner of the competition was the most honoured man in Athens.

And Artists.—It is not easy to speak about the Greek architects and sculptors, or to praise the temples they built and the statues they made. The difficulty is to say why it is that people have made such a fuss of them. But the plain fact of the matter is this: many peoples have produced works of art and they have been generally forgotten, so that to-day

nobody thinks twice about them. The Greeks alone, or almost alone, wrote books and built buildings and made statues which, instead of being forgotten in the lifetime of the men who made them, lasted on and are to-day preserved among the most valuable things in the world. Nobody can say quite why this is, for the buildings are not very grand, nor are the statues highly ornamented or decked out with precious stones and jewels. Indeed they are very simple, and at first sight look very ordinary. You see a statue, say, of a young man racing or throwing a ball, or an old man thinking, and that is all. But just as a modern yacht with a few straight and simple lines can be more beautiful than a heavily gilded and highly adorned Chinese junk or Spanish galleon, or a boy in flannels playing cricket than a bishop dressed up in ornamental robes, or a mayor in all his chains and gowns of office, or an elaborately dressed lady, so these simple Greek things are more beautiful than all the gorgeous patterns and stuffs and jewels of the East.

About Greek pictures and music unfortunately we know very little. Many of the greatest pictures in the world were produced by the men of a civilization not very unlike that of the Greeks, a civilization of small cities or city-states which flourished in Italy some eighteen hundred years afterwards, from about A.D. 1350-1550.

Italian and Dutch Painters.—The great Italian painters were the first to learn how to manage light and shadow, and to make the people in their pictures look as solid as people in real life. They made them, that is to say, look not only tall and wide but

also thick-through. They also mastered the art of perspective, that is, how to make things in a picture appear to be at different distances. But although the great Italian painters, Michael Angelo, and Raphael and Leonardi Da Vinci, knew these things and were great craftsmen because they knew them, it was not this knowledge that enabled them to paint great pictures, nor was it because they succeeded in making their pictures look like life that they were great. This is a puzzling thing to say, and it becomes even more puzzling in connection with the great Dutch painters.

These flourished for about three hundred years, from about 1350 to 1650. They painted very ordinary things, a river, a view of a town, a street, a dining-room, a woman playing the piano, people drinking and talking. These pictures look exactly like life; so much so that you would say at first that they were very clever coloured photographs. And no doubt it required a very great degree of skill to make such accurate pictures of real things. The great Dutch painters, Van Eyck, Rembrandt, Vermeer and others, certainly possessed this skill and were particularly cunning at mixing colours. Yet, although their pictures seem to be exactly like life, it is not for this reason that people value them and regard the painting of them as among the most important things that mankind has achieved. For photographs are just like life, and, if all you could say about the pictures was that they were like life, they would be no more valuable than photographs, which nobody thinks important enough to make much fuss about. After all, we can see things for

ourselves, so what is the point of making pictures which are just like the things we see?

What more, then, is there to say about these pictures besides the fact that they are just like life, and why is it that people place such value on them? Because they are beautiful, and being beautiful give people who know how to look at them very great happiness. What is being beautiful? Thereby hangs a tale, a very long one, which you will probably hear about one day, but which I cannot tell in this book, for it is a tale which nobody knows how to tell properly even now. And that, I am afraid, is all I can say about pictures.

The German Musicians.—About music I can say even less. Many people think music the most valuable thing in the world, and the power to produce great music the most important thing in civilization. Great music, like great pictures, is beautiful, but beyond that there is little to be said. You will hear it for yourself one day, and then you will know why people make so much fuss about it.

But there is, perhaps, just one thing that I ought to say, and it is this. Just as the goodness of pictures does not consist in their being like the things which they represent, so the goodness of music does not consist in its being like the noises we know, noises such as those of storms, or running water, nor even in its being able to suggest things to us, such as gladness or hope, or a spring morning. Most music that is good is arranged rather like a pattern, say, in a piece of embroidery; and there is generally an air, like a piece of golden thread, which you can

trace and follow and keep in mind all the time the music is being played.

The great musicians of the world are the Germans, and most of the world's finest music was produced in about one hundred and seventy years, between 1650 and 1820, in a small part of Germany and Austria. The German musicians, Bach (1685-1750), Mozart (1756-1791) and Beethoven (1770-1827), are among the greatest men who have ever lived, and their music has done more perhaps to make people civilized than any other single thing.

CHAPTER III

FINDING THINGS OUT

SPEAKING broadly, the Greeks were the first people who were not afraid to think as they pleased. They did not believe things merely because the gods or their ancestors believed them, or because the priests said they ought to believe them. They tried to find out for themselves. But what chiefly interested them was what one might call things in general. They wanted to know what was the beginning of things and what the end, what the world looked like when there was nobody to look at it; whether people had souls as well as bodies; what being good was and how human beings could best live together in society. Questions like these are the beginning of what is called philosophy.

How the Scientists went to Work.—But the people we are now concerned with, the scientists, were interested in the actual things round about them, the things they saw and heard and touched, which make up what is called the physical world. Now, unlike the questions in which the Greeks were interested, the answers to which are always more or less doubtful, the questions that interested the scientists were questions to which you could really

find out the answers, and, what was more, you could be sure that your answers were right. For instance, if you want to know whether people have souls, you can't find out by looking inside them because a soul is a thing you can't see. But if you want to know whether their blood circulates and how, you can cut them open and look. Finding out whether what you think is right is called making experiments, and it is by making experiments that science has progressed.

Suppose, for instance, that you have heard that, if you put the handle of an electric coil in water, you can give people a stronger shock, and you want to know whether what you have heard is true or not. You take out your coil and ask somebody to hold the handles under water; then you turn on the current and see what happens. That is doing an experiment; it is doing what the scientists do. The scientist, you see, doesn't just sit in his study, think very hard and come to the conclusion that things must be like this or like that; he goes and finds out exactly what things are like. He doesn't discover that flowers have pistils, stamens, pollen and so on by reasoning; he pulls a flower to bits and sees what its parts are.

Now it was by this method of experimenting and looking to see what things were like, instead of just reasoning out what they must be like, that the scientists made their discoveries.

Science first began to become important after about A.D. 1500. During the Middle Ages the coming of science was hindered by the Church, which considered free inquiry into the nature of things to

be wicked. In the middle of the fifteenth century, however, a famous library of Greek books at Constantinople was sacked. As a result of this the books came to be circulated, men read them, became inquisitive again, and began to want to find things out. You must think, then, of the scientists as really getting going about the time of Elizabeth, and in a sense they have been going ever since.

This is not a book about science, and I can only here speak briefly of a very few of the things the scientists found out which have had most effect on people's lives.

The Astronomers.—A Pole called Copernicus (1473-1543) and an Italian, Galileo (1564-1642), were the first important modern scientists. Copernicus discovered that the earth was not flat, that it is not the centre of the heavens and that it does not stand still. These discoveries helped people to understand what the physical world was like, and laid the foundations of our knowledge of astronomy. Galileo continued his work and got into trouble with the Church because he said that the earth moved.

Newton and Harvey.—An Englishman, Sir Isaac Newton (1642-1727), discovered more about the working of the physical universe than any other single person. He is chiefly famous for his law of gravitation. Before Newton, people thought that, if you let a thing drop, it fell down on to the earth because the earth pulled it: and so it does in a way. But the earth's pull is not special to the earth. It is only an instance of the attraction which all things have for each other. In actual fact

everything attracts and pulls towards itself everything else, but this pulling towards each other of ordinary things is not noticed in everyday life because the pull of the earth is so much greater. Newton's law of gravitation was not only a statement of the fact that everything pulls everything; it also showed exactly how strong the pull would be according to the distance from each other and mass of the pulling bodies. In our own time a German-Swiss scientist, Einstein, who is still alive (1879-), has made certain alterations in Newton's law, and indeed has changed our notion of the universe in several ways. But Einstein's work could never have been done if it had not been for Newton.

While Newton was discovering some of the laws of the working of the material universe, another Englishman, Harvey (1578-1657), had been finding out the laws of the working of our bodies. The most important thing about our bodies is the circulation of the blood. The blood-stream carries food and air to all the parts of the body, without which they could not do their work. If the blood did not circulate, the body would stop working. This is what happens when a man dies. Now although the fact that the blood moved about the body had been known as long ago as the Greeks, it was Harvey who showed the part played by the heart in circulating the blood. The heart is like a pump; it sends the blood out clean and fresh, receives it back dirty, sends it on to the lungs to be cleansed, and sends it out again. This discovery of Harvey's was the beginning of a general advance in our knowledge of the body. Medical

knowledge, as it is called, first became scientific, that is to say, as the result of Harvey's work, people began for the first time to understand *why* what happened in the body did happen. 20. 00. 1.

Darwin and Evolution.—Another great change in our ideas about things was caused by the discovery of Evolution. This brings up the name of another great Englishman, Charles Darwin (1809-1882), whose most important book was called The Origin of Species. What Darwin did was to discover the way in which living things had changed and multiplied and developed on the earth. Once, we know, the earth was lifeless; it was much too hot for living things to exist. The origin of life itself is still unknown, but we know that the first living creatures were things like jelly-fish, and that life in the first instance was confined to the sea-shore and the sea-bottom. To-day there are many thousands of different kinds of living things (we know of twenty-eight thousand kinds of birds alone), and there is life all over the earth.

This change from the earliest kinds of simplified jelly-fish to thousands of kinds of complicated living things all over the earth is called the process of evolution. It was this process that Darwin discovered. He not only discovered how it happened, but also, in part, why it happened. Every now and then there would be born to creatures of a particular species young ones who were not exactly like their parents. They would differ from them, possibly in some not very important way—they might have longer necks or shorter legs—and because of the difference they were called "variations". Now

the primitive world was one in which it was not over-easy to get your meals. There was scarcely enough food to go round, and to get your share you had to be brave enough to fight or cunning enough to steal. And, while looking for food for yourself, you always had to remember that you yourself were food for somebody else, some creature stronger or swifter than you, who was on the look-out to catch you and turn you into a meal. This continual competition to get enough to eat, this continual wariness to avoid being eaten yourself, is called The Struggle for Existence.

Now let us suppose you are a "variation" and so are rather different from your parents and neighbours. In the struggle for existence this difference will be either a help or a hindrance. If it is a hindrance, you starve or get eaten, and that is the end of you. If it is a help, you survive and prosper, mate with an animal who is slightly different from the rest in just the same way as you are different, and pass on your "variation" to your offspring. Thus the "variation" becomes part of the species, just because it is not only a "variation" but an advantage as well. And that very briefly is how Darwin thought species changed and developed, very gradually, of course, and very slowly, but nevertheless continuously.

This continual changing of living creatures is called evolution. Darwin tried to tell the story of the changes, and to show how all living things in the world to-day probably developed from one or two early and very simple kinds of creatures. This applies also to ourselves. For we too are living crea-

tures, and, if other living creatures have evolved, so have we. In point of fact, Darwin showed that we were descended from a creature rather like a lemur. The race of big monkeys, the apes, were also descended from the same stock, so that we are a kind of distant cousin of the apes. This meant of course that the account of the creation of Adam and Eve in the first chapter of Genesis in the Bible could not be quite true. It might have the truth of a fairy story, or it might be true in the sort of way in which Jesus's parables are true, but it was certainly not true that God created the first man and the first woman suddenly, as it were, out of nothing, and placed them in the Garden of Eden. For there was no first man. Man has very gradually evolved from the animals by a series of very small changes lasting hundreds of millions of years, and you could no more say when man began to be man and ceased to be an animal than you could say when water stops being water and becomes ice, when it is freezing.

This discovery came as a great shock to people. For one thing, it meant that Bible tales were not necessarily true, and that meant that some of their religious ideas might be mistaken. It also meant that, since men had not always been men but had gradually evolved out of something different, so in all probability they would not always be men, but would gradually evolve into something different again.

This discovery of the way in which living creatures have changed and developed is one of the most important things that science has found out,

and has changed people's ideas more, perhaps, than anything else.

Elements and Atoms.—I will mention one more discovery or set of discoveries that the scientists have made before ending the chapter. These have to do with matter and the nature of matter.

We are accustomed to think that everything is made of matter, chairs and tables and people's bodies and books, and even fire and air and water. But what is matter itself made of? There are two branches of science which try to answer this question. The first is chemistry. Chemists experimented with pieces of matter, and were able to show that all the different things that there are in the world are really made of quite a few materials which are used over and over again, like houses which, although they are of all shapes and sizes and colours, are all of them, or nearly all, made of bricks. Now there are not many different kinds of bricks, say twenty or thirty at most; yet they can be made to produce hundreds of different kinds of houses. How is that? Because the bricks are used in different quantities and arranged in different ways. Now chemists found that not only houses but all the material things that there are in the world are built up of a comparatively few kinds of bricks used in different quantities and arranged in different ways. These world bricks are called elements, and there are ninety-two of them. Some of them are met with in ordinary life; silver is one, lead another. But most of them are ordinarily only found combined with other elements. These ninety-two elements, arranged in different ways and present in different

quantities, account for all the differences that there are between material things, between your body and grass, and between grass and stone. How did the scientists find this out? By taking things to bits.

You know that if you take a watch to bits, you can show it to be made up of lots of different wheels and a spring. Well, the chemists found out how to take to bits any piece of matter, in order to show what it was made of. And always they found different quantities of the same ninety-two elements. One of the ways of taking a thing to bits is to make it very hot; for, when a thing is very hot, the different elements of which it is made have a way of separating themselves off and showing themselves. The thing becomes unstuck, as it were. The science of chemistry is very young; in fact, practically all its discoveries have been made in the last three hundred years, by the peoples of Western Europe, the Germans, the French, the English and the Italians.

One further thing remains to be told. It now seems that the elements, the bricks themselves, are made up of simpler bricks still. These very simple bricks are called atoms. What are the atoms made of? Nobody quite knows, but it is something like electricity. What this means is that all the material things in the world, if we could only divide them up sufficiently small and see what they were made of, would be found to be electricity. The science which deals with the nature of atoms, these tiny little bits of fundamental stuff which are, as it were, at the bottom of everything, is called physics.

What Matter can be made to do.—Now in the

process of discovering things about matter, of dividing it up into its simple elements and the elements into still simpler atoms, the scientists have also discovered all sorts of things about it; what it can be made to do, for example, and how in different connections it will behave. Turn it into steam and it will behave one way, into petrol and it will behave another way, into electricity and it will behave differently again. But whether it is used as steam, or petrol, or electricity, matter contains immense power. Used as steam it will drive engines, and as petrol, cars; in the form of electricity it will give light, and of coal, heat. In order to make use of these powers which are locked up in matter, men have made machines, and machines have altered our own lives in all sorts of ways.

The invention of machines belongs to a different story, the story of how men have applied what they have found out to make their lives easier and happier. This story deserves a chapter to itself. But it is important to remember that the discoveries which chemists and physicists made when they were trying to find out what matter was like and how it worked, merely because they were interested in these things, were what enabled men to invent machines, and in so doing to make a new kind of civilization.

23. Oct 1952.

CHAPTER IV

HOW SCIENCE HAS CHANGED OUR LIVES

1. Making use of what has been found out.—I want in this chapter to say something about the way in which the scientific discoveries described in the last have changed men's lives. And not only changed them, but made them happier and easier and more secure. Human beings to-day know more than they did two hundred years ago, they suffer less pain, they work less hard, they are more reasonable, and they are not so much afraid of things. This last point is important. Through most of history men have been terribly afraid, afraid not only of wars and pestilences and famines, but of unreal things, of the wrath of angry gods, of the devil, of curses, of the Evil Eye, of seeing magpies, of walking under ladders, of the dark. . . . We call this fear of unreal things superstitious fear, and one of the things science has done is largely to free men from superstitious fears. For in giving them knowledge and helping to make them reasonable, it has taught them which things are really fearful and which are not. The result is that men are less frightened than they used to be; their lives are brighter and their minds clearer. In a word, they are more civilized.

I can only here touch on a very few things that have helped towards this result, and I will begin with the human body.

2 Lengthening Human Life.—To-day most of the babies born live, become children and grow up, and most grown-up people live to grow old. We are accustomed to this and think it natural. But it is very far from being natural. The natural thing, at any rate the usual thing, in history has been for most babies to die as babies, and for most grown-up people to die long before they were old. That is to say, whereas four hundred years ago the chances were that a baby would die in childhood, to-day the chances are that it will live to be about forty-five. Only two hundred years ago in London three out of every five children who were born died before they were five years old, and of the poor children who were brought up in workhouses practically all perished. Even members of royal families, whom you would expect to be as well looked after as anybody alive, usually died while they were children. Babies born in slums to-day still die very fast, much faster than among the rich. But, even so, a slum baby born to-day has three times as good a chance of growing up as a baby born in a royal family in the Middle Ages.

Everybody has heard of the Great Plague of London in 1665, when 70,000 people, that is about one in every six, died. What most people do not know is that something very like what we should call a plague has been going on all through history, so quickly and so easily did people die.

Now one of the chief causes of this terrible

death-rate among children and grown-ups was ignorance about the human body. People imagined that diseases were due to acts of God, or they thought that parts of the body just went wrong of their own accord. And if anybody had a high temperature, their usual remedy was to make a hole in him and let out some of his blood, to cool him, as it were.

3. *Germes as the Cause of Disease.*—I have already told of Harvey's discovery of the circulation of the blood. Scarcely less important was the discovery of germs as one of the chief causes of disease. This was mainly due to a celebrated French chemist called Pasteur (1822-1895). Pasteur found that many diseases were due to tiny living creatures called germs, which dwell and feed on living bodies and poison them. There are millions of germs living in your body and mine, in the clothes we wear and in the food we eat. If we are well and strong they usually do not do us any harm, but if we are tired or cold or run-down, then the germs can attack us and make us ill. In particular, if we cut ourselves, the germs can make their way into the cut and poison us. The colds which we catch when we get wet feet are due to the germs which attack us when we are weak and low; and, when a cut finger festers, the festering is also due to germs.

4. *Drains and Disinfectants.*—Now Pasteur's discovery was important, because it taught doctors that one of the best ways of curing diseases was to find out the nature of the attacking germs that caused the disease, and then either to kill them or help the body to kill them. Even more important, it taught them

to be clean. When a surgeon operates to-day, he takes immense trouble not only to wash his hands, but to wash all the instruments which he is going to use, and, indeed, everything he touches. And not only to wash them but to boil them. This is called sterilizing, and the object of it is to kill the germs with which the instruments, like everything else, are infected; for dirt of any kind is a great germ-carrier. The trouble which doctors now take to keep everything clean has played an important part in the lengthening of human life which has occurred in the last two hundred years.

Or think of the use of drains in large cities. Drainage, by means of which refuse of all kinds (dustbin refuse, lavatory refuse and washing-up refuse) is got rid of, is a new thing in civilization. The Middle Ages smelt abominably. There was no way of disposing of refuse, which lay about in heaps and stank. Now, wherever there is rotting refuse, there is always a danger of plague. In particular people are apt to catch diseases like typhoid fever. This is not so much because of the smell as because rotting matter is a great breeding-place and gathering-place for germs, and diseases like typhoid which are caused by germs are therefore much commoner where there are no drains. It was an Englishman called Lister (1827-1912) who, following Pasteur's discovery of germs as a cause of disease, insisted upon extreme cleanliness wherever illness was concerned, and revolutionized the hospitals and operating-rooms of his day.

5 Getting rid of Pain.—While drains and disinfectants have helped to lengthen human life, and

to make illness less frequent and less deadly, another discovery not less important than that of germs has made it less terrible. This is the discovery of anaesthetics.

If you go to the dentist and he is expecting to hurt you rather more even than usual, for example by pulling a tooth out, he gives you gas. The gas sends you to sleep and you do not feel the pain. The gas is a form of anaesthetic, which is used to put people to sleep whenever anything particularly painful is going to be done to them. Chloroform is the anaesthetic most generally used for long operations. The discovery of anaesthetics does not sound particularly important, yet it is probable that no single discovery of science has done more to increase people's happiness. This it has done by lessening their pain, and removing their fear of pain. Pain, brute, physical suffering is by far the most dreadful thing in the world. Imagine what it must have been like to have been a soldier wounded, let us say, in the leg and to have had your leg sawn off without anything to dull the pain. Bad as this must have been, operations which meant cutting people open must have been a hundred times worse—so bad indeed, that for all practical purposes operations were impossible. Whatever could be done was done. Wounded soldiers were made drunk with rum, and people who were to be operated upon were rendered unconscious by a blow on the head. But clearly the complicated taking to bits and putting together again of people's bodies which doctors do now was out of the question, and people died in great numbers whose lives would

now be saved by timely operations. Dying, perhaps, is not so bad, but dying in agony is terrible. To-day, even when we cannot cure sick persons by medicine or by an operation, we can at least relieve their suffering and let them die peacefully by giving them anaesthetic drugs. You must think, then, of being alive as a much less painful business than it used to be because of this discovery of anaesthetics.

The Way in which People have treated their Bodies.—Apart, however, from curing diseases and making them less painful, increased knowledge of the body has led to a better treatment of it all round. Under the influence of superstition people have done terrible things to their bodies in the past, cut them and mutilated them, painted them odd colours and stuck pieces of metal into them. Women's bodies in particular have been twisted and maimed in all sorts of ways by what is called fashion.

All through the ages women have put iron rings through their noses and hung weights from their ears. They have twisted the toes of their feet under their soles until they grew like that, and women walked not on feet but on little pegs of flesh. This last thing was done in two highly civilized countries, in China and in France in the reign of Louis XIV. It is still done in China to-day. In sixteenth-century Italy court ladies were required to reduce their waists to a measurement of thirteen inches, by wearing a hard solid ring or mould of wood. This wooden mould took all the skin off the waist; splinters penetrated the flesh, while the ladies' ribs were squeezed one on top of the other. Ladies of

the Middle Ages wore enormous head-dresses which were called "hennins", which weighed so much that their unfortunate wearers could not keep their heads straight for more than an hour or so at a time. In the eighteenth century ladies wore large baskets on each side of their waists called "panniers", which prevented them from sitting down; in Elizabeth's time they wore things called "ruffs" round their necks, which prevented them from eating soup.

Now fashions to-day are often silly, but they do not usually involve positive pain, nor do they do positive harm to the body as they have so often done in the past.

¶ Clothes.—Again, people to-day wear more sensible and comfortable clothes than they have usually done. This too is largely the result of scientific invention. In the eighteenth century women used to wear leathern stays and wadded woollen petticoats. These could not be washed and were difficult to take off, so the women wore them day in and day out, until they fell to pieces. Almost all women up to the last hundred years, even highly placed ladies of fashion, were very dirty and must have smelt badly; and, because they were dirty, they died early and in large numbers. The use of cotton, which came late into the world, has had much to do with the improvement in women's clothes and so in their health. Cotton gave them underclothes which could easily be taken off, easily put on and easily washed.

¶ The Coming of Machines.—But this use of cotton was only made possible by machines, and it is now time to speak of the quite new and special changes

which machines have made in men's lives, changes which have made modern civilization different from all other civilizations.

Scientists, as we saw in the last chapter, have during the last three hundred years found out all sorts of things about the nature of matter and the forces that work in the material world. In so doing they have learnt how to mould matter to men's uses, and to harness its forces in men's service.

9 *How Machines are made.*—How is this done? I have not space to tell the whole story here, but very briefly it is this. Coal and iron are dug from the bowels of the earth. We use the coal to heat the iron, and, when it is in a molten state, cut and twist and shape it to our uses, or make it into steel and shape that instead. So we make machines, and the parts of machines. We use coal to heat water; the water boils and turns into steam, and the steam is used to drive the machines.

The machines are mainly of two kinds, the first for producing things, the second for carrying them about. With the beginning of the nineteenth century came a great change from hand production to machine production. That is to say, things which were previously made by people's hands were now made by machines, the machines being worked not by hands but mainly by steam. Everybody has heard of Robert Arkwright's (1732-1792) spinning frame, by means of which raw cotton was spun to be made into material for clothes and sheets and pillowslips. From this invention of the spinning-frame sprang the cotton industry. The county of Lancashire became one great cotton factory, to

which raw cotton was sent from India and America. But what was being done to cotton was being done at the same time to wool, leather, wood, brass and tin, with the result that practically everything we use to-day, from our boots to our clothes, from our biscuits to our biscuit tins, is made by machines.

10 What Machines do.—The effects upon men's lives of this use of machines for producing things will be described in the last chapter, where I shall say something about our own civilization. Here I shall mention one only of the most obvious. A machine works much faster than a human being, and it works much harder. In other words, one machine in a given time, say an hour, can do as much work or produce as many goods as ten or twenty or a hundred or even two hundred men in the same time. Obviously it is better to get work done by machines, and the transfer to machines of work that had formerly been done by human hands was accordingly going on all over the Western world during the last century.

Now if one machine can produce as many goods as a hundred men, it is clear that one or two things should happen. Either men will have to work for a much shorter time than they did before machinery was invented in order to produce the same quantity of goods, or, if they continue to work just as hard, the amount of goods produced ought to be immensely increased. In other words, human beings ought to be becoming much lazier or much richer or both. And so in a way they are; but not quite in the way one might have expected. But this too is a subject which belongs to the last chapter.

11 Electricity, Oil and Petrol.—The other main use of machines is to carry from place to place the goods which machines have produced. George Stephenson (1781–1848) invented the first railway engine, and in the nineteenth century England, Europe and America were covered with a network of railways. It is nearly a hundred years ago since Faraday (1791–1867), a famous English man of science, found out how to unlock the electricity stored in the heart of matter. Faraday made an electric spark that was presently to light the world; there were batteries and presently there were dynamos; and a new power whose future we can only dimly see, the power of electricity was harnessed to men's service. A way was presently found of treating the oil which gushes up in wells and springs in various parts of the earth. It was refined and refined, until it became petrol. Petrol mixed with air becomes a gas, which when squeezed tight in a confined space can be exploded by an electric spark. The power generated by repeated explosions brought a new sort of engine into the world, the petrol explosive engine, which was made to drive motor-cars and, later, aeroplanes.

12 The World becomes One Place.—As a result of these different inventions, trains and cars and aeroplanes, men move with a new rapidity about the earth, and practically no part of the earth's surface to-day remains undiscovered.

More important even than discovery is that men in different parts of the world are getting to know, to understand and to meet each other, and enter into what are called social and business relations.

As a result there is a coming and going, a writing and sending and meeting between men belonging to different countries all over the world which we call international intercourse, and this international intercourse has grown up side by side with the old relations which people had with each other because they lived near together in the same country.

Suppose, for instance, I am a member of a company which sends oranges from Brazil to England. Then I shall be much more interested in the welfare and prosperity of the people growing oranges in the wilds of Brazil, and of the people sitting in offices in Rio de Janeiro arranging for their transport, than in the welfare and prosperity of my neighbour in London, whom nine times out of ten I do not know. This interest, which I and the men in Brazil have in one another's concerns, is called an economic bond, and during the last hundred and fifty years the world has been covered by a network of these bonds. And economic bonds make others; for example, I must be able to write to my business partner in Brazil, and I can only do this if there is a system of letter-carrying and letter-delivering between England and Brazil and, indeed, all over the world; and so there has grown up an International Postal Association.

In a hundred such ways to-day, men all over the world are coming into contact with one another, and the world becomes more and more one place.

CHAPTER V

THE SPREADING OF KNOWLEDGE

Why Civilizations have not lasted.—Several times in the history of the world particular countries and cities, or even small groups of people, have attained a high degree of civilization. I have already told of fifth-century Athens and said something of the Dutch and Italian painters and the German musicians.

Yet none of these civilizations, important as they were, have lasted, and one of the reasons why they did not last was that they were confined to a very few people. They were like little oases of civilization in deserts of barbarism. Now it is no good being civilized if everybody round about you is barbarous, or rather, it is some good, but it is very risky. For the barbarians are always liable to break in on you, and with their greater numbers and rude vigour scatter your civilization to the winds. Over and over again in history comparatively civilized peoples dwelling in cities have been conquered in this way by barbarians coming down from the hills and burning and killing and destroying whatever they found in the plains. In the thirteenth century most of Europe was overrun in this way by the

Mongols from Central Asia, and such civilization as then existed was nearly destroyed. Thus any people which has advanced in civilization too far beyond its neighbours has always been liable to be set upon and pulled back by the others, just as, if you build a high tower without proper supports, it is always liable to fall down to the level of the lower buildings round about it.

Now one of the noticeable things about modern civilization, which is also one of the reasons why it is likely to outlast the others, is that it is more or less free from this particular danger. And it is free from it, because it is far less local and far more widespread than the others; so widespread, indeed, that it already covers a large part of the earth.

2. How Knowledge spreads.—Of two of the reasons for this spreading of civilization, the increased ease of travel and communication, and the existence of a common interest in money-making between people in different parts of the world, I have already spoken. More important even than these is the new machinery for the spreading of knowledge and culture which science has invented. As the result of this machinery, what one people or even one man knows, tends to spread through the world and to become the common possession of all. Of these machines for spreading knowledge I will mention three—printing, education and wireless.

3. Printing and Books.—Printing is a device for multiplying what is written by making copies of it. Little metal letters, called type, are arranged in such a way as to form the words that you want to print. The letters are then inked over and sheets of paper

are pressed down tight upon them. The inked letters leave their marks upon the paper, and these marks are the printed words. As many copies can be made of what is printed as there are sheets of paper. So far as Europe is concerned, type was first used in Holland in the middle of the fifteenth century and was introduced into England by Caxton (1422-1491).

4. More important than the use of type was the paper upon which it was printed. Paper originated in China, where it was being used two centuries before Christ, but it was not used in Europe until after A.D. 1000, when the Arabs introduced it.

Once paper became plentiful you could print as many copies of a piece of writing as you pleased, and instead of the laboriously written, beautifully illustrated manuscripts of the Middle Ages, there were books.

5. The effect of books is twofold: they preserve knowledge in time and spread it in space. Suppose, for example, that you think of an important idea or a beautiful poem. Unless you can write it down, your idea or poem will probably die when you do. Even if you do write it down, it perishes as soon as the mice eat the paper, which they often do and do quickly. But once printing had been discovered, it did not matter how soon you died or how many copies of what you had written were eaten by mice, for, so long as one copy remained, the idea or the poem could be made to last for just as long as people chose to go on printing it. And so it could live long after you had died. Not only could it live in time, it could spread through space, for by

making enough copies of it you could bring it to the notice of hundreds and thousands of people, until to-day you can send it all over the world.

6. Books are the chief carriers of civilization; because of them ideas live and spread. How important books are you can judge from the fact that very hot countries, as is well known, have little civilization. There are many reasons for this, but one of the most important is that the white ants, who live in the tropics, eat up all the books. For example, in tropical South America there are practically no books more than forty or fifty years old. Where there are no books, there are no records and no literature; the ideas and knowledge of one generation are not handed on to the next, and it is much more difficult for the race to progress and become civilized. But it is no use having books unless people can read them, and learning to read is part of what is called education.

7. Learning to Read.—It may seem strange to speak of education as a piece of machinery, but looked at properly that is just what it is, machinery for passing on knowledge and ideas. By its means each fresh generation of people can be made acquainted with all that the preceding generations have found out, so that instead of beginning all over again, as it were, they can start where those who went before them left off. Thus knowledge is like a torch which is passed on from generation to generation by the hands of education.

8. Now it is obvious that to have to *tell* people all that those who lived before them have thought and found out would be a terribly lengthy and boring

business. People who want to know these things must be able to find them out for themselves, and in order that they can do this, they must know how to read.

9. People have been able to read for thousands of years—three thousand at least—but only a very few of them; the mass of people in every country and age except our own has been unable to read, and, since knowledge belonged to the very few who could read, they had an immense advantage over the many who could not.

10. I told in the Introduction (see p. 16) how the mass of mankind has usually been bullied and oppressed throughout history by a very small ruling class. This has only been possible because the rulers knew things which the masses did not, and this advantage in knowledge, and, therefore, in power, was partly due to the fact that the rulers could read. It is only in the last fifty years, and in a few Western countries, that this great inequality has been removed. As recently as sixty years ago most of the people alive in England could not read, and only half the children were being taught to read. It is exactly fifty years ago (since 1880) that a law was passed in this country making it compulsory for all children to learn to read.

11. Wireless.—Finally, in the last ten years there has come wireless. And the importance of wireless is this: people who live in such distant places that they practically never see a paper, and who have no time to read books, have only to turn on the loud-speaker to learn about the important things that are happening all over the world. Thus they

are kept abreast of the knowledge and ideas of their time.

12. Civilization in the past has been like a race in which a few of the runners have got right ahead of the others. But at any moment they were liable to be pulled back to the level of the laggards, and so the race for civilization was slowed down. Sometimes, as happened for instance in the Dark Ages, they were pulled so far back that the race had to begin practically all over again. To-day there are fewer laggards, and they are constantly and increasingly being brought up to the level of the others.

13. And it is through the discoveries of science, through books and education and newspapers and wireless, that this gradual levelling up has been achieved.

14. *Not interfering with People.*—The last and not the least important way in which science has changed people and made them more civilized is by making them more tolerant. A tolerant person is one who does not interfere with other people, even if he thinks they are wrong, but is prepared to let them think what they like and say what they think. If he thinks they are wrong, he may try to persuade them to believe differently, but he will not try to force them.

15. This may not seem a very important point, but a great deal of the misery of mankind in the past has sprung from people being unwilling to tolerate other people thinking differently from themselves. This intolerance has been particularly common in religious matters. All over the Western world

for instance, people have killed and tortured other people for not believing the same things as they did about the nature of God, and Jesus and the Virgin Mary.

16. Most religious beliefs are based on faith, and the point about them is that although you may be quite convinced of them yourself, you cannot be sure of persuading other people to believe them too, just because you cannot produce evidence for them. For instance, if you believe that there are two eggs in a nest, and want somebody to believe it too, you take him and show him the eggs. But if you want somebody to believe that he will go to heaven when he dies, you can't take him and show him heaven, and so you can't persuade him that you are right. And yet, of course, you may be quite right.

17. Now it is with regard to beliefs of this kind, beliefs for which there is no actual evidence and which may, therefore, be wrong all the time, even although we may be quite sure that they are right, that people are more tolerant than they used to be. Formerly, if a man thought differently about religious matters from his neighbours, he was very likely to be burnt alive. And if he did not believe in God and had no religion at all, he was thought exceedingly wicked and was punished. This is no longer so. To-day we are tolerant of other people's beliefs and on the whole let them think what they please.

18. Now this toleration is a new thing in the world, and it is one of the most important things in modern civilization. It has come very gradually, and it has only been won after a hard fight. The

fight has been not so much to let people think what they liked—obviously you couldn't stop them doing that—as to let them write and say what they thought. And the permission has only been given very gradually. It is only a hundred and forty years ago that a famous writer, Thomas Paine (1737-1809), was exiled from England for writing a book called *The Age of Reason*, in which he showed that everything in the Bible could not be quite true; and the man who published the book was condemned to eighteen months' imprisonment and to stand in the pillory once a month. It is less than fifty years ago that a famous Englishman, Charles Bradlaugh (1833-1891), obtained the right to sit in the House of Commons without first swearing an oath in the name of God, in whom he did not believe. And to-day there is still a law in England under which you can be imprisoned for saying certain kinds of things about God, although this law is very rarely used, while in America and Russia men are put in prison for saying that the Government is a bad kind of government, and trying to persuade people to change it for a government of a different kind.

CHAPTER VI

THE SHARING OF MONEY

I HAVE already said something about the necessity of order and security in the world, if there is to be civilization. You can only have order and security where the laws are just as between man and man, and where people respect and obey them.

1. But there is another sort of justice called economic justice, which has to do with the sharing of the nation's money and goods.

2. Order and security are necessary for civilization, but they are not enough. It is not much good having security for your possessions, if you have no possessions. Freedom, again, is necessary for civilization, but it is not much good being free, unless you can also get the means to live. The means to live are food and clothes and shelter, or, in modern countries, the money with which to buy them; and if you have no money or very little, and have to work terribly hard in order to get it, then political justice is of little use to you, for you will not have enough leisure to enjoy yourself or enough good things to enjoy.

3. Revolutions.—Now although a fair amount of political justice has been achieved in the world,

notably in England, where there has long been democratic government, there has been very little economic justice. An economically just society would be one in which everybody who is prepared to work is certain of getting a reasonable amount of money, just as a politically just society is one in which everybody is reasonably secure and free from the fear of violence. But, as we look through history, we find that the people who have worked hardest have always been poorest, and those who have been rich have worked very little and often not at all. Political justice and economic justice are connected. If you and your friends have all the power in the government, you can make the kind of laws you want. And the kind of laws you want will be those which benefit you and your friends. They will be laws to make and keep you rich and to make and keep everybody else poor. This state of things is clearly unjust, so unjust that several times in history people have risen against it, and made a revolution which aimed at a more equal division of the nation's wealth. The French revolution at the end of the eighteenth century was one such rising, and the Russian revolution in our own times (1917) another.

5. How Money is divided now.—But in spite of revolutions the advance in economic justice has been very small. Most people in all countries are still very poor, while a few are still very rich, and, although our civilization has been able with the aid of scientific inventions to provide well-to-do people with unheard-of luxuries and comforts, many still find difficulty in getting enough food to

eat and enough clothes to wear. And, what is perhaps most surprising, those who are poorest are those who do the hardest, the dullest, or the most dangerous work. Dangerous work is that of the miners who get coal from underground at the risk of their lives; hard and unpleasant work is that of iron-workers who spend their days in overheated factories, hammering molten metal into different shapes; dull and drudging work is that of domestic servants who do all the dirty work about a house. Yet miners, metal workers and domestic servants get very small wages compared with people who do pleasant things like organizing and directing and bossing other people; indeed, they scarcely get enough to live on.

6. Why is this? The answer is a complicated one, and it is one about which people are not agreed. I must, however, try to say something about it, since it seems fairly clear that we cannot have an all-round civilization while the rewards which people get for their work are so unequal.

1. I explained in Chapter V how the coming of machines had enabled people to produce far more goods than they had done in the past. Because of machines there are many more things of all kinds that people want in the world to-day than there ever were before. Now this great increase of goods ought to have benefited everybody, bringing a new comfort into the world and an abundance of all the things that people want. And it is, in fact, true that common people in civilized countries live better than they used to do before goods were produced by machines. But they do not live as much better

as they ought to do. Where, then, has this new wealth that the machines have produced gone? Most of it has gone into the pockets of a very few people. The rich are much richer than they were before; there are more of them, and there is a larger number of people who do no work of any kind.

8. Thus the good things which science has brought into the world have not been distributed equally, a fair share to everybody; but they have been scrambled for, snatched at and seized upon, by gamblers and adventurers, just as the boys at Westminster school scramble for the biggest bit of pancake on Shrove Tuesday. And much of the money has just been wasted; for example, on wars, and on guns and battleships and tanks for fighting wars.

9. Why People are not Better Off.—Again, just as people in general have not been made much richer by the coming of machines, so their work has not been made much easier, or not anything like so much easier as it ought to have been made. During what is called the Industrial Revolution at the end of the eighteenth and the beginning of the nineteenth centuries when the machines were first used to produce things, the hours and conditions of work for most people were very bad indeed. They used to labour in badly lit mines or factories, where the air was so foul that you could hardly breathe, for twelve or fifteen hours out of the twenty-four. And not only men and women, but small children, who had to go to the factory or the cotton-mill at the age of four or five, and stay there working hour after hour until they fell asleep. Most people will have read of the little boy who was made to act as a

living chimney-brush in the first chapter of Charles Kingsley's book *The Water Babies*. But in spite of all this work people were so hard up that they had as many children as they could, in order that the tiny extra wage that each child brought home might just enable the family to keep alive.

10. But we have still to answer the question why this is. Let us suppose that you own a large cake, and people come to you begging for slices of it. They are very hungry, almost starving, and they will do almost anything you please for a bit of your cake. And you, being anxious to make as much out of your cake as possible, decide that a person may have a piece only on condition that he works for you for as long as you like. And if he does not like your terms, you can safely tell him to go without, knowing that there are lots of other people who will be willing to do anything you ask them to do for a slice of your cake. Clearly you are in a very favourable position and will grow rich and powerful. Put the word machine instead of the word cake, and you will understand how it is that in modern civilization wealth is unequally divided. The machines were owned by a few persons from the very beginning—generally they were those who happened to be clever enough to see how much money could be made by a new invention and rich enough to buy the invention—and the great mass of people had no choice but to work for the people who owned the machines. Of course they were free to work or not as they pleased, but, since to work was the only way to avoid starving, they had no choice but to accept work on whatever terms the owners of the

machines offered it to them. And the terms were usually hard ones, so that of the largely increased amount of money made by the machines only a small share has gone to those who worked the machines, all the rest being taken by those who owned them.

11. *The Russian Revolution.*—There is in the world to-day a great and growing discontent with the state of things I have described. One of the objects of the Russian revolution (1917) was to get rid of the rich rulers and to divide their money and land more equally among the people in general. The men who made the Russian revolution thought that nobody should be allowed to have any money unless he worked for it, and they also held that those who labour with their bodies do just as important work as those who sit in offices and work with their brains. Although the revolutionaries managed to get rid of the ruling class of favoured people, to capture the government, and to make important alterations in the way in which money and land are divided, they have not as yet been successful in establishing the kind of society at which they aimed. The mass of the people are still very poor, and they are not free to say and think what they like. And without freedom there is no real civilization.

12. But whatever happens in Russia, one thing is fairly certain, and that is that there cannot be any good and lasting civilization in the world, until whatever wealth there is is more fairly divided than it is at present. If you have not enough money, you cannot become civilized. If you have not a good

education and a certain amount of leisure and freedom, you cannot become civilized. These things, money and the education and leisure that comes from money, the great mass of the people have all through the world's history been without. Even in England to-day, although, as I pointed out in the last chapter, everybody is now more or less educated, the education of poor children stops at the age of fourteen, while that of well-to-do children goes on until they are nineteen or twenty.

12 Thus it has happened that, while there have been in the past a number of civilizations, they have been civilizations of comparatively few people, and the rest of mankind has always been a long way below the level of these few. This is the main reason why all the civilizations that there have been in the world up to now have been short-lived.

CHAPTER VII

OUR OWN CIVILIZATION

1. *An Ordinary Day.*—The best way of understanding our own civilization is to take an ordinary sort of day in the life of an ordinary sort of man, myself for instance, and to see what he does. I get up in the morning because an alarm clock rings on the table by my bed; it goes by clockwork and is a very complicated machine. I get into a hot bath, the water for which has been heated by gas in a geyser. The gas, like the water, is supplied to me by a body of people elected to represent me and all the people in the district in which I live, which is known as the local authority. After bathing I shave; the water for my shave comes from a kettle which has been heated by electricity. So far as I am concerned, what happens is very simple: I put a plug in the wall and press a switch, and the electricity does the rest. I use a safety razor the blade of which, made of very finely tempered steel, has been turned, together with millions of other blades, by a machine in America. The clothes which I put on have also been spun and woven largely by steam or electrically driven machines.

2. My breakfast-room is heated by a gas-fire, which

is regulated by an automatic machine in the hall; I put a shilling in the slot of the machine and my fire will then burn for a given time. During breakfast I read in my paper of things that have happened all over the world. The report of these things has been brought to the newspaper office by telegraph, telephone and wireless, and the paper has been printed by immensely powerful and complicated printing-machines. After breakfast, I walk to the tube station and descend deep into the bowels of the earth by means of a lift which used to be worked by water-power, and is probably now worked by electricity. The train that takes me along the tube is also driven by electricity, which is generated at an electric power station several miles away. I arrive at my station, am carried up to the surface of the earth by a moving staircase, again worked by electricity, and take a bus to my office. The bus is driven by an engine which works by exploding a gas made of petrol and air. At my office I dictate letters to a shorthand writer, who types them out by means of another machine, a typewriter. I also send telegrams to people hundreds of miles away and speak to them over the telephone. The telegrams are sent by electric signals transmitted along wires, and, when I telephone, my voice travels along another set of wires which run for part of their way along the bottom of the sea.

3. I have given only a few of the events of an ordinary day of an ordinary man, but you will see how in countless ways, in his work, in his travelling and in his amusements, he relies on machinery. Whenever he wants to do anything or hear any-

thing or see anything or go anywhere, he calls upon machines to assist him. And the machines are made to work by means of the power—steam, electricity, petrol, or whatever it may be—that man has won from nature.

1. *Machines as Extra Limbs.*—Now at first sight it might seem as if modern human beings who spend so much time getting help from machines are very lazy. For what are the machines for but to save people trouble? They are extra limbs which men have made outside themselves to do their work for them. Cranes and lifts are extra arms to do the job of lifting, trains and motors extra legs to do the job of walking and running. Typewriters and printing-machines are extra brains to save us the trouble of remembering. We have even invented for ourselves new kinds of limbs, and make aeroplanes to take the place of the wings we have not got. And yet it is difficult to suppose that men would have gone to all the bother of inventing these complicated machines to serve as their extra limbs merely because they were lazy; that they would have taken all this trouble merely to save themselves trouble. And in fact man is not at all lazy; he is the most restless and energetic of all living creatures.

2. Why is it, then, that man alone of all the animals has gone to the trouble of inventing so many devices for saving himself the labour of lifting and carrying and walking and remembering? The only answer seems to be that these things bore him; they are not the things he really wants to do, and so he gets the machines to do them for him, in order

that he may have time and energy for other things, for the things he really does want to do. What things?

6. I cannot answer this question without saying something about the bad parts of our civilization. But it would not be fair to do this without first praising it for its good parts. What are they? ✓

7. *Praise of our Civilization: Order and Safety.*—First and foremost there are order and safety. If to-day I have a quarrel with another man, I do not get beaten merely because I am physically weaker and he can knock me down. I go to law, and the law will decide as fairly as it can between the two of us. Thus in disputes between man and man right has taken the place of might. Moreover, the law protects me from robbery and violence. Nobody may come and break into my house, steal my goods or run off with my children. Of course there are burglars, but they are very rare, and the law punishes them whenever it catches them.

8. It is difficult for us to realize how much this safety means. Without safety those higher activities of mankind which make up civilization could not go on. The inventor could not invent, the scientist find out or the artist make beautiful things. Hence order and safety, although they are not themselves civilization, are things without which civilization would be impossible. They are as necessary to our civilization as the air we breathe is to us; and we have grown so used to them that we do not notice them any more than we notice the air.

9. For all that, they are both new things and rare things. Except for a short period under the Roman Empire, there have been order and safety in Europe only during the last two hundred years, and even during that time there have been two revolutions and a great many wars; thus it is a great achievement of our civilization that to-day civilized men should in their ordinary daily lives be practically free from the fear of violence.

10. Health.—They are also largely free from the fear of pain. They still feel ill, but, since the use of anaesthetics became common, illness is no longer the terrible thing it used to be. And people are ill much less often. To be healthy is not to be civilized—savages are often healthy, although not so often as is usually supposed—but unless you have good health, you cannot enjoy anything or achieve anything. There have, it is true, been great men who have been invalids, but their work was done in spite of their ill-health, and, good as it was, it would have been better had they been well. Not only do men and women enjoy better health; they live longer than they ever did before, and they have a much better chance of growing up.

11. It spreads Everywhere.—Thirdly, our civilization is more secure than any that have gone before it. This is because it is much more widely spread. Most of the previous civilizations known to history came to an end because vigorous but uncivilized peoples broke in upon them and destroyed them. This was the fate of Babylon and Assyria; it has happened over and over again in India and China;

it brought about the end of Greece and the fall of Rome.

12 Now, whatever the dangers which threaten our civilization, and they are many, it seems likely to escape this one. Previous civilizations, as I have said before, were specialized and limited; they were like oases in a surrounding desert of savagery. Sooner or later the desert closed in and the oasis was no more. But to-day it is the oasis which is spreading over the desert. Modern civilization is a far-flung thing, it spreads over Europe and America and parts of Asia and Africa. Practically no part of the world is untouched by it. And, owing to the powers of destruction with which science has armed it, it is exceedingly unlikely that such savages or uncivilized peoples as are left in the world could prevail against it. ✓

12 The World as One.—Thus the world has now for the first time a chance of becoming a single whole, a unity. So far as buying and selling and the exchange of goods are concerned, it is a unity already. I did not mention my meals when I described my ordinary day; if I had done so, I might have taken note of the fact that the food I eat comes from all over the world. The things in a grocer's shop, for instance, are from the ends of the earth; they come out of strange countries and over far-off seas. There are oranges from Brazil, dates from Africa, rice from India, tea from China, sugar from Demerara. No great Caliph, no Eastern king, not even Solomon in all his glory, could draw on such rich stores of varied produce as the housewife who does her shopping at the grocer's. The fact that

these things come to us from all over the world means that for the first time the world is becoming a single place, instead of a lot of separate places shut off from one another.

14. Until quite recently the nations of mankind lived in a number of separate boxes holding no communication with each other except when the people in one box invaded those in the next, and some of the boxes were never opened at all. To-day there is constant coming and going between the boxes, so much so that the sides of the boxes are breaking down, and the world is beginning to look more like one enormous box. And by now all the boxes have been opened, so that there is little danger of unknown people breaking in upon our civilization from outside and destroying it. The danger comes rather from within; it is a danger from among ourselves. This brings me to our defects.

15. Defects of our Civilization.—To-day, with certain exceptions, there is little political oppression; men are equal before the law and in many countries have a voice in deciding how and by whom they shall be governed. But the sharing-out of money—which means the sharing-out of food and clothing and houses and books and so on—is still very unfair. In England alone one-half of all the money which is divided every year (called the national income) is received by one-seventeenth of the population; which means that one half is divided among every sixteen people, and the seventeenth person gets the other half. So, while some few people live in luxury, many have not even enough to eat and drink and wear. Again, in England to-day thou-

sands of people live in dreadful surroundings. There are many families of five or six persons who live in a single room; in this room they sleep and dress and wash and eat their meals; in this same room they are born, and in this same room they die. And they live like this not for fun, but because they are too poor to afford another room.

16. It is, I think, clear that until everyone gets his proper share of necessary and delightful things, our civilization will be far from perfect.

17. *The Danger of War.*—A still greater danger comes from war. Although the world is, so far as the buying and selling and exchanging of goods are concerned, a single whole, there are still barriers between nation and nation, barriers erected by the governments. Sixteen years ago, from 1914 to 1918, the most destructive war that the world has known took place between the great nations of Western Europe. The causes of that war were very many, but chief among them were fear and pride. Each nation was afraid of the power of the other nations, and each nation was too proud to admit it. And because of this fear the nations spent great quantities of money in making rifles and cannons, in building battleships and in training soldiers, until Europe was like a big armed camp. A single match will set a hayrick ablaze, and, with all this war material lying about, Europe was like a hayrick waiting for its match. Almost any match would do; presently somebody struck one, and Europe blew up.

18. In spite of this last explosion there are to-day many more trained soldiers in the world than there

were before the last war, and the nations are spending still more money on war preparation. They still pride themselves on being good at fighting more than on anything else, and each nation always thinks that it is going to win.

A little while ago an Eastern king friendly to England, King Amanullah of Afghanistan, paid a visit to London to see what Western civilization was like. He was taken to see tanks at Lulworth Cove and bombing aeroplanes at Hendon; he was given a trip in a submarine and allowed to fire a torpedo off Spithead, but nobody took him to see the leading English poet, or indeed any poets or painters or musicians or makers of beautiful things. Nor was he taken to visit any scientists or philosophers. Three hundred years from now the Afghans reading about this visit in their history books will think the English must have been a very warlike nation who were not interested in the things of peace, and did not care enough about their civilization to want to show it off to visitors. It is, in fact, true that we are prouder of our battleships than of our poets, and spend far more money on destroying people in war than in making them happier and wiser in peace.¹ And what is true of England is just as true of the other countries. So long as the nations go on like this, it only wants another match to set the hayrick alight and it will blaze again. And so destructive has modern war become, that another blaze will probably burn up our civilization altogether. ✓

¹ For example, England spends about 116 million pounds a year on preparations for war, whereas before the last war she spent only 40 millions.

20 What may prevent this is a body called the League of Nations. This was set up after the last war in order to provide a sort of law court for nations, to which they could bring their disputes for settlement. Just as private persons who quarrel no longer fight in the street but go to law, so, it was hoped, quarrelling nations who would previously have gone to war to settle their disputes would now go to the League of Nations instead. The League represents all the important nations of the world, and, although it is not yet strong enough to prevent wars, it may one day become so, especially if it has an international army and navy at its back which have been contributed by all the different nations who belong to it. Thus, in the League of Nations lies one of the chief hopes for the world.

21 *The Danger from Machines.*—The third great defect of our civilization is that it does not know what to do with its knowledge. Science, as we have seen, has given us powers fit for the gods, yet we use them like small children.

22 For example, we do not know how to manage our machines. Machines, as I have already explained, were made to be man's servants; yet he has grown so dependent on them that they are in a fair way to become his masters. Already most men spend most of their lives looking after and waiting upon machines. And the machines are very stern masters. They must be fed with coal, and given petrol to drink, and oil to wash with, and they must be kept at the right temperature. And if they do not get their meals when they expect them, they

grow sulky and refuse to work, or burst with rage, and blow up, and spread ruin and destruction all round them. So we have to wait upon them very attentively and do all that we can to keep them in a good temper. Already we find it difficult either to work or play without the machines, and a time may come when they will rule us altogether, just as we rule the animals.

23. What are we to do with our Time?—And this brings me back to the point at which I asked, a page or two back, “What do we do with all the time which the machines have saved for us, and the new energy they have given us?” On the whole, it must be admitted, we do very little. For the most part we use our time and energy to make more and better machines; but more and better machines will only give us still more time and still more energy, and what are we to do with them?

24. The answer, I think, is that we should try to become more civilized. For the machines themselves, and the power which the machines have given us, are not civilization but aids to civilization. As I said at the beginning, there is nothing particularly civilized in getting into a train. But you will remember that we agreed at the beginning that being civilized meant making and liking beautiful things, thinking freely, and living rightly and maintaining justice equally between man and man. Man has a better chance to-day to do these things than he ever had before; he has more time, more energy, less to fear and less to fight against. If he will give this time and energy which his machines

have won for him to making more beautiful things, to finding out more and more about the universe, to removing the causes of quarrels between nations, to discovering how to prevent poverty, then I think our civilization would undoubtedly be the greatest as it would be the most lasting that there has ever been.

THE END

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